

LAUREL HILL QUARRY, INCLINED PLANE
Both sides of State Route 56,
2.4 miles east of State Route 711
Seward Vicinity
Westmoreland County
Pennsylvania

HAER No. PA-222-A

HAER
PA
65-SEW.V
1A-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

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Location:

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2.4 miles east of State Route 711
Seward Vicinity
Westmoreland County, Pennsylvania

UTM: 17.671285.4473930
Quad: Vintondale, PA, 1:24,000

Date of Construction:

Circa 1902

Engineer/Builder:

Not known

Present Owner:

Commonwealth of Pennsylvania
Department of Environmental Resources
Harrisburg, Pennsylvania 17108

Present Use:

Abandoned

Significance:

This inclined plane was constructed by the Conemaugh Stone Company to carry sandstone from its quarry at the crest of Laurel Hill to the Pennsylvania Railroad tracks at the base of the mountain. It represents a common but ingenious engineering solution to the problem of transporting stone from quarries that frequently were remote and at high elevations. Similar structures were used at quarries throughout this mountainous region. While associated machinery, equipment and tracks have not survived, the bed of this incline is very well preserved west of the highway.

Project Information:

The Pennsylvania Department of Transportation intends to widen State Route 56, which would necessitate the destruction of about fifty feet of the inclined plane on the west side of the highway. The associated cut stone abutment also would be removed. To mitigate the adverse effect, the State Historic Preservation Office stipulated documentation of the resource.

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The first decade of the 20th century was a period of dynamic expansion for the Pennsylvania Railroad under its seventh president, Alexander Cassatt. During this period numerous improvements were made to the railroad's Western Pennsylvania Division, including its facilities in Cambria County. The Conemaugh Stone Company of Philadelphia was one of many firms that supplied building materials to the railroad for the improvements undertaken to the Main Line and the various branches. Henry S. Kerbaugh, president of the Conemaugh Stone Company, is mentioned as a P.R.R. contractor in contemporary Cambria County newspapers, which also occasionally note the activities of his work crews. The Conemaugh Stone Company seems to have been only one of his business enterprises.

Railroad improvements required large quantities of crushed, cut and rubble stone. The Conemaugh Stone Company operated several sandstone quarries in the vicinity of Johnstown and in northern Cambria County to provide materials for roadbed, bridges, culverts, and other structures. One of these quarries was located a few miles northwest of Johnstown, at the crest of Laurel Hill in the Conemaugh Gorge, a deep water gap cut through Laurel Hill by the Conemaugh River. This quarry produced cut stone and possibly rubble stone derived from outcrops of the Pottsville formation, which was considered to have great value as a building stone because of its durability and pleasing appearance.

The sandstone outcrops on the crest and slopes of Laurel Hill south of the river may have been exploited commercially on a small scale prior to the activities of the Conemaugh Stone Company. Contractor Patrick McManus of Philadelphia and the Glen Mills Stone Quarrying and Crushing Company had owned part of the tract for a few years before the Conemaugh Stone Company purchased 421 acres and 38 perches of mountain land in 1900 for \$10,000. In 1901 the Conemaugh Stone Company leased an additional 1,972 acres from C.H. Barker in order to quarry "all merchantable and serviceable stone suitable for railroad building and other purposes", including "the right to erect construct and build . . . roads tramways and railroads of any gauge . . . and with the right to erect machinery shops houses derricks and other works and plants necessary for the quarrying manufacturing and removing said stone". The term of the lease was fifteen years.

The quarry apparently was in operation for only a few years, and a thorough sampling of the Johnstown Tribune between 1901 and 1908 failed to reveal any mention of it. No descriptions, maps, or photographs were located in any of the likely repositories, including the Cambria County Library, the Johnstown Flood Museum, the libraries of the Pennsylvania State University and the University of Pittsburgh, and the Pennsylvania State Archives. Staff members of the America's Industrial Heritage Project and the Historic American Engineering Record were unable to provide any information, despite the recent completion of HAER inventories of Westmoreland and Cambria County industrial resources.

Despite the lack of documentary information regarding the quarry, the field inspection suggested that the scope of the quarrying operation was quite limited, at least in the vicinity of the inclined plane. Outcrops of the Pottsville formation extend in both directions along the crest of the mountain, but appear to have been quarried only within 400-500 feet of the incline. The incline is shown on a 1907 USGS map, indicating that it probably was still in operation at the time, but a geological survey published in 1910 suggests that this was no longer

the case, noting that "the Conemaugh Stone Company formerly quarried sandstone for use in construction along the Pennsylvania Railroad from its quarry on the south side of Conemaugh River a few miles southeast of Conemaugh Furnace". The company conveyed its 421 acres to Henry S. Kerbaugh in 1910, and Kerbaugh sold it to the Land Title and Trust Company in 1917. The Commonwealth of Pennsylvania eventually acquired much of the land on the south bank of the river and designated it as state game lands.

The quarry was located at the crest of the mountain at an elevation of 1900-2000 feet AMSL, approximately 900 feet above the elevation of the Pennsylvania Railroad tracks below. Mountain crests were considered to be ideal locations for sandstone and gneiss quarries because the overburden was thin and there was minimal danger from rolling boulders. However, this created difficulties in transporting excavated stone to the nearest railroad connection. The typical solution to the problem was to construct an inclined plane from the crest of the mountain to the base. A contemporary discussion of quartzite quarrying describes the "comparatively simple" operation: "A plane is constructed, running up the mountain face to the floe and tracks are laid from the plane along the mountain so that the broken rock may be worked in benches. . . . As rapidly as the rock in one locality is exhausted the tracks are moved to another". This was the strategy employed at the Laurel Hill quarry. Stone was transported down the mountain on the inclined plane, but the quarrymen probably reached the site by the rough road that followed the crest and which provided access to both Johnstown and Seward.

No machinery, equipment, or buildings survive at the quarry site; these probably were removed when the operation was discontinued. Visible remains include level areas cut into the steep slopes of the mountain, a thirty to fifty foot high rock escarpment from which the stone was quarried, numerous mounds of excavated soil and rubble stone, two apparent earthen loading platforms, and several rubble stone ramps. A tramway probably extended along the face of the mountain to both ends of the quarry, but except for its level bed no vestiges of the tramway have survived. The small rubble stone ramps, typically about fifty feet long, were used to transport stone from the work areas to the tramway; some stone may have been loaded by hand, but a derrick would have been necessary for larger pieces. While rubble may have been shipped from this quarry, the considerable effort involved in constructing the incline and associated features suggests that the principal product was cut building stone. A longer rubble stone ramp, approximately 250 feet long, elevated five to ten feet above the surrounding terrain, and with a slope of about 40 degrees, probably represents the remains of a small inclined plane used to link the main work area with a smaller quarry nearer the crest. Most soil has been eroded from the ramps and elevated portions of roads or tramways, leaving only the rubble stone used in the construction. The sheer escarpment itself is at present obscured by thick masses of rhododendron and other vegetation, making it impossible to photograph.

Although no contemporary photographs or descriptions of the Laurel Hill inclined plane could be found, it probably was rather similar to others for which descriptions are available. Another plane was in use during the same period on the north bank of the river at the east end of the Conemaugh Gorge, and was associated with the quarrying of Pottsville formation sandstone that was crushed

and used in concrete manufacture. In that case, a contemporary account noted that "the larger pieces are broken up and the stone is removed to the mill, which is located on the railroad, by means of small cars moving on an inclined plane and controlled by a stationary engine at its foot". A discussion of inclines used in the quarrying of quartzite described the typical configuration: "The gravity plane includes a steel cable wound on a drum or around two sheaves, 5 to 6 feet in diameter, in the form of a figure-8. The speed of rotation of the sheaves is controlled by grooved wooden brakes. The rails may be arranged so that there are three, with a switch in the center, or three in the upper part of the plane and two in the lower part with one line of cable below the center and two above. One or more cars may constitute a trip on the plane. The size and distance of the quarry from the head of the plane determine whether cars shall be hauled by mule or dinky engine or pushed by hand". A contemporary quarrying handbook, Elements of Mining and Quarrying (1910) confirms this typical mechanical arrangement.

Although the stationary steam engine that provided the power for an incline could be located at either the top or bottom of the plane, inclines used at sandstone and quartzite quarries normally had the engine at the base. This probably was due to the greater accessibility of the base relative to the mountain crest. At the upslope terminus there would have been a cast iron drum mounted on a tower, around which the incline's endless wire rope was wound. This apparently was the arrangement used at the Laurel Hill quarry. The cable cars on a steep incline usually were constructed so as to provide a horizontal platform for the load; the wagons or tramcars carrying stone from the quarry could be unloaded at the head of the incline, or sometimes pushed onto the horizontal platforms of the cable cars and carried down the mountain.

Inclines varied considerably in length and slope, depending on the local terrain and the intended purpose. The numerous inclines operating in Pittsburgh during the late 19th and early 20th centuries varied in length from 350 feet to 2640 feet, and in slope from 14.2% to 71.5%. The inclined plane at the Laurel Hill quarry falls within this range, with a length of about 1300 feet and slope of approximately 69%. The inclined plane at Johnstown, called the steepest passenger incline in the world, is 896 feet long with a slope of 71%.

The inclined plane at the Laurel Hill quarry is oriented in a general east-west direction and was constructed at a constant angle of approximately forty degrees from the base of the mountain to the crest. The total length of the incline is approximately 1300 feet, with a break where it crosses State Route 56; the lowest 200 feet of the plane is east of (below) the highway and the remainder is above. The consistent angle of the structure and the somewhat steeper slopes of Laurel Hill necessitated both cutting and filling during its construction. Below the highway and for about 220 feet above it, to the upslope edge of the Pennsylvania Electric Company power line right-of-way, the inclined plane consists of a mound of rock and earth fill about five to fifteen feet in height, about fifteen feet wide and relatively level on top, with side slopes of approximately 75 degrees. Soil and rock used in its construction was excavated primarily from the south side of the plane, resulting in a depression running parallel to the structure on that side. Beginning about 220 feet above the highway, the structure enters a cut configuration, with the cut between ten and fifteen feet

deep below mounded soil on both sides. This cut configuration continues to the top of the mountain except for the last fifty feet, which is composed of fill. This plane differs from most of the Pittsburgh inclines, where the tracks were located on a steel superstructure, in that its tracks seem to have been constructed at ground level for the structure's entire length, except where it crossed State Route 56.

At the base of the incline, about 200 feet below the highway and 40 feet above the Conrail main line tracks, is a small level area about 25 feet wide, obscured by very dense vegetation. No structural remains are visible, although there are eight large (two ft by three ft) square cut stone blocks on the surface with no apparent pattern of distribution. An abandoned road leads away from the level area in a southerly direction toward the railroad tracks. At the edge of the level area is a 20 ft slope, then another level area 15 feet wide which ends in another steep slope with a former railroad spur at its base. It is assumed that a structure would have been located at the base of the plane, housing the stationary engine that powered the operation. A hoisting apparatus also would have been situated here to transfer stone from the cable cars to railroad cars on the siding. However, there are no surviving vestiges of any structures or machinery.

At the point where the incline crosses State Route 56 (Haws Pike), there are the remains of a cut stone abutment on the upslope (west) side of the highway. The abutment is 15.5 feet high and 59.5 feet wide, and is in an advanced state of collapse. It consists of a facing of unmortared cut stone over rubble fill; stones used in its construction vary in size from 10 inches by 22 inches to 17 inches by 40 inches, and may have been quarried at the crest of the mountain. In its construction and appearance the abutment is typical of contemporary railroad-related structures. Presumably, a steel superstructure would have carried the incline over the road at this point; no traces of the structure survive.

The most conspicuous surviving structure associated with the inclined plane is a massive cut stone tower at its upslope terminus. Measuring 25 feet wide, 44 feet long, and 25 feet high, the tower is oriented with its narrow side facing the end of the inclined plane. The structure is built into the mountainside so that its top is at the same height as the level area at the lower quarry, presumably providing access to machinery on the top of the tower, while its downslope end is 25 feet above ground level. A three-foot wide ledge is located at the front of the structure, five feet below the top. On top of the tower are three narrow platforms, each one stone wide, running the length of the structure, one in the center and one on each side. The central platform is four feet wide, while those on the sides are two feet wide, and the troughs between them are five to six feet wide. Iron rods protrude from the side platforms at their midpoints, and two similar rods are located at the front of the central platform. The tower is located about 150 feet from the end of the inclined plane, with a break in slope between them. A rubble stone ramp links the quarry area with the slope adjacent to the bottom of the structure.

It is assumed that the top of the cut stone tower supported the large cast iron drum around which the incline's endless wire rope was wound. It also may

have supported a derrick or hoisting apparatus used to transfer stone from tram cars to cable cars. The area between the tower and the head of the plane probably was used as a transfer area and may have contained frame ramps, platforms, and other structures. No evidence of former structures in this area has survived. Although a shallow depression about ten feet wide links the base of the tower with the head of the plane, its slope is much more gradual than that of the plane.

The Laurel Hill quarry and its associated inclined plane are remnants of the quarrying and mining activity that was an important component of the regional economy in the late 19th and early 20th centuries. The region's rugged topography encouraged the use of inclined planes as a method of moving industrial raw materials, as well as people, and numerous such structures were built throughout the region during this period. The incline at the Laurel Hill quarry appears to be a typical example of the type. It represents a common but ingenious engineering solution to the problem of transporting stone from quarries that frequently were remote and at high elevations. The Conemaugh Stone Company's operations at this and other local quarries also are important within the context of the early 20th century growth and expansion of the Pennsylvania Railroad.

SOURCES OF INFORMATION

A. Engineering drawings:

No engineering drawings of the Laurel Hill inclined plan are known to exist.

B. Historic views:

A thorough search at the Glosser Memorial Library in Johnstown (Cambria County Public Library), the Greensburg Public Library, the Johnstown Flood Museum, and the Pennsylvania State Archives failed to locate any historic views of the inclined plane or quarry.

C. Interviews:

No individuals could be found who possess any information about the inclined plane or the quarry.

D. Bibliography:

1. Primary and unpublished sources:

Westmoreland County Land Records. Deed Book 291, pages 283-284; Deed Book 292, page 376; Deed Book 310, page 276; Deed Book 477, page 239; Deed Book 586, page 225.

2. Secondary and published sources:

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United States Geological Survey. Vintondale, Pennsylvania Quadrangle, 1:24,000. 1964 edition.

E. Likely sources not yet investigated:

None known.

F. Supplemental material:

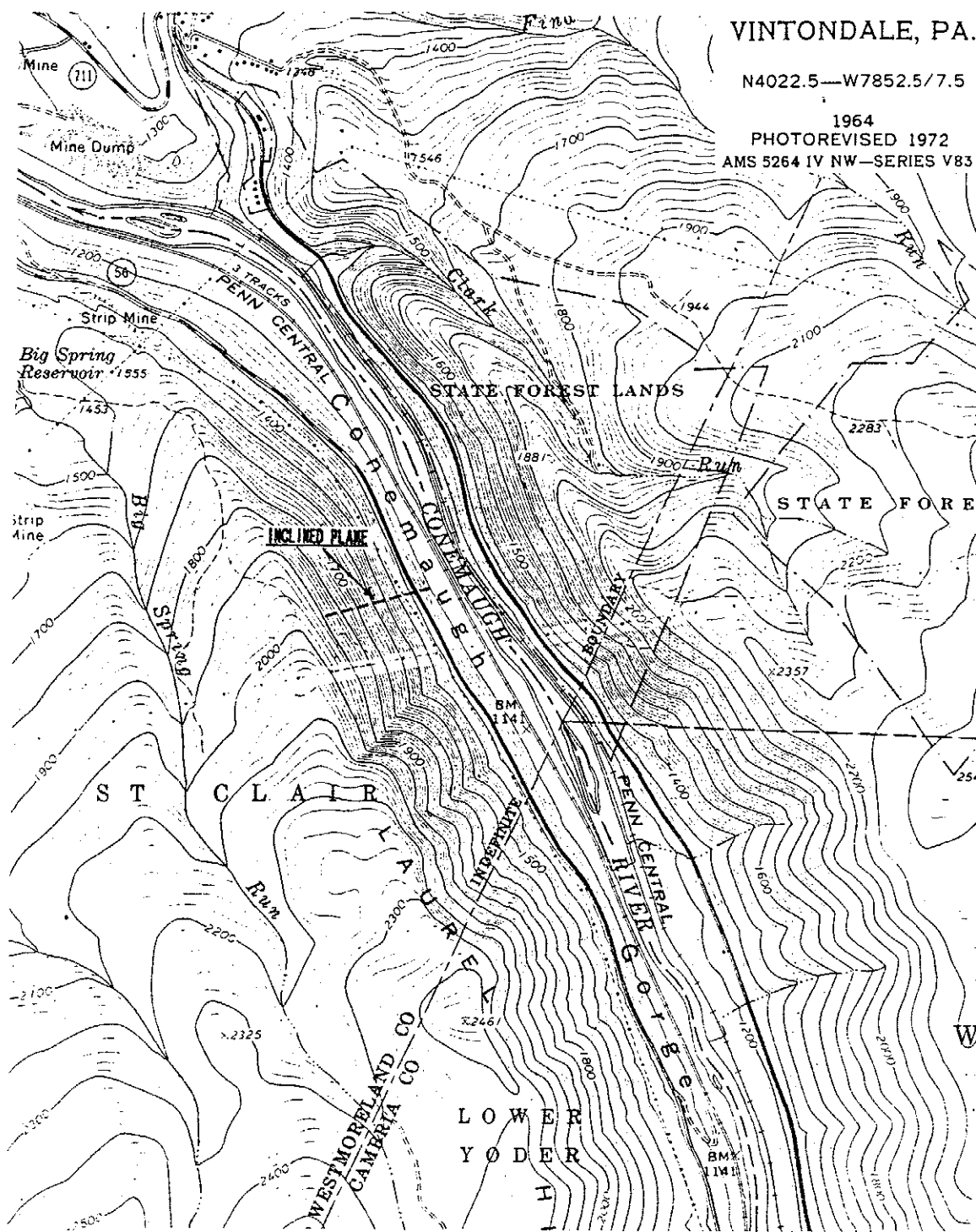
None.

LAUREL HILL QUARRY, Inclined Plane
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VINTONDALE, PA.

N4022.5—W7852.5/7.5

1964
PHOTOREVISED 1972
AMS 5264 IV NW—SERIES V83I



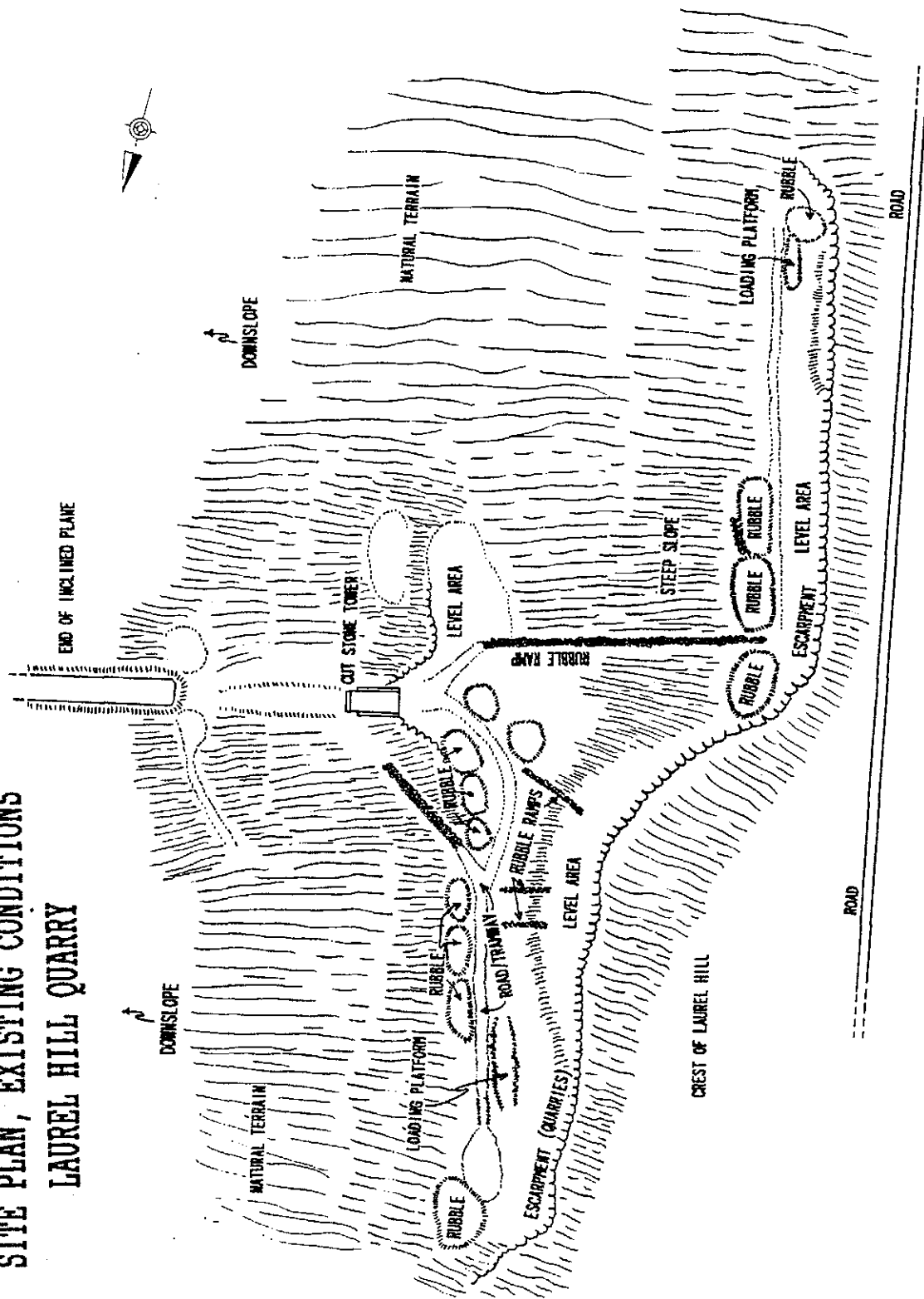
LOCATION MAP, LAUREL HILL QUARRY AND INCLINED PLANE (USGS 1964)

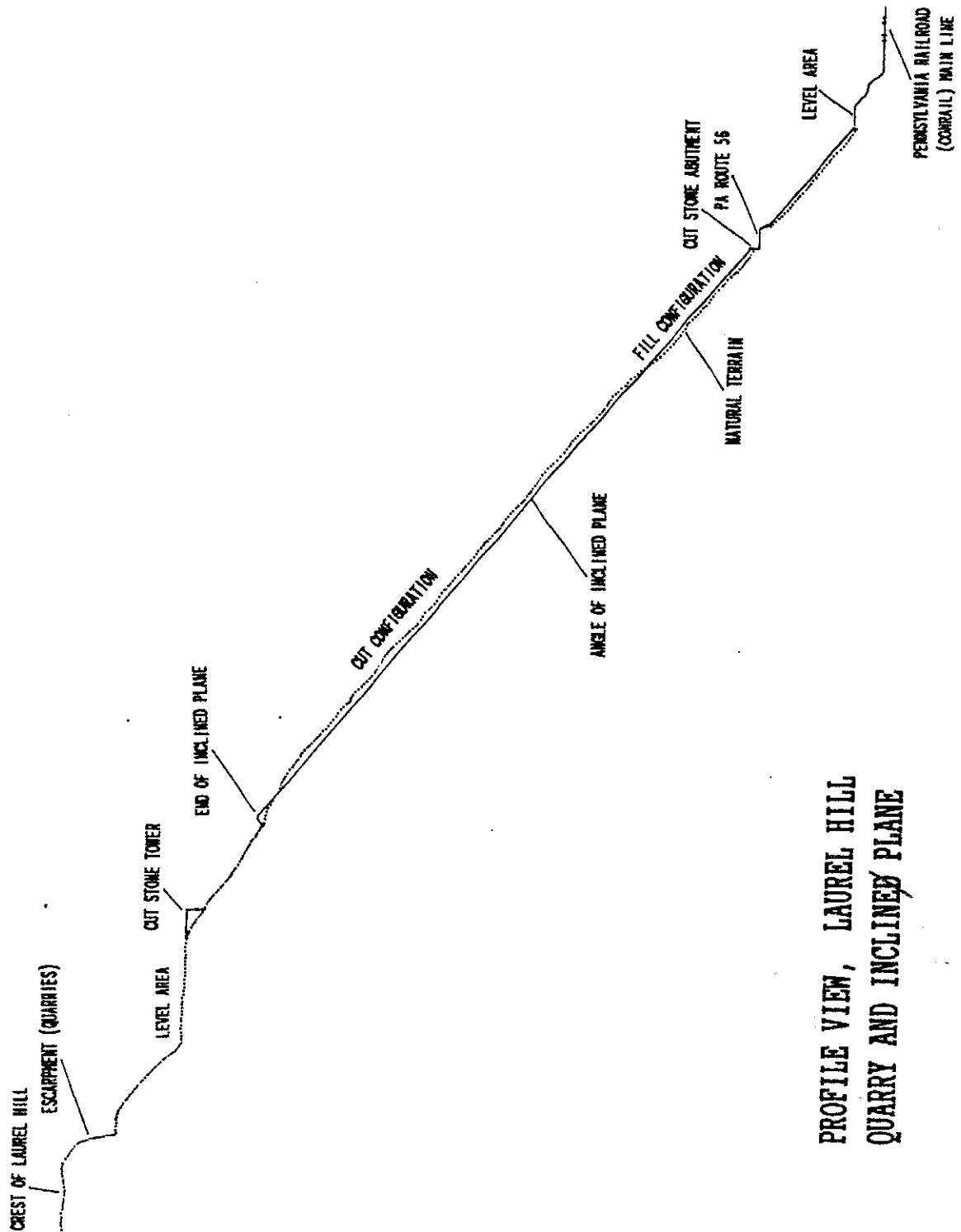
LAUREL HILL QUARRY, Inclined Plane
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PORTION OF 1907 USGS MAP SHOWING INCLINED PLANE (USGS 1907)

SITE PLAN, EXISTING CONDITIONS
LAUREL HILL QUARRY





PROFILE VIEW, LAUREL HILL
QUARRY AND INCLINED PLANE